SEQUENCE LISTING

<110> The University of Georgia Research Foundation, Inc

<120> A POLYPEPTIDE HAVING AMIDOLYTIC ACTIVITY FOR A SERPIN

<130> 235.00210201

<140> PCT/US00/10574
<141> 2000-04-20

<150> 60/130,436
<151> 1999-04-21

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<170> PatentIn Ver. 2.1

<210> 1
<211> 843
<212> PRT
<213> Porphyromonas gingivalis

<400> 1

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Met Gln Gly His Ser Ala Pro Val Thr Lys Glu Arg Ala Leu Ser Leu
            20                  25                  30

Ala Arg Leu Ala Leu Arg Gln Val Ser Leu Arg Met Gly Gln Thr Ala
        35                  40                  45

Val Ser Asp Lys Ile Ser Ile Asp Tyr Val Tyr Arg Gln Gly Asp Ala
    50                  55                  60

Glu Arg Gly Ile Thr Ser Gln Glu Glu Gly Ser Pro Ala Tyr Phe Tyr
65                  70                  75                  80

Val Ala Asn Arg Gly Asn Asn Glu Gly Tyr Ala Leu Val Ala Ala Asp
                85                  90                  95

Asp Arg Ile Pro Thr Ile Leu Ala Tyr Ser Pro Ile Gly Arg Phe Asp
            100                 105                 110

Met Asp Ser Met Pro Asp Asn Leu Arg Met Trp Leu Gln Ile Tyr Asp
        115                 120                 125
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Gln Glu Ile Gly Leu Ile Leu Ser Gly Lys Ala Gln Leu Asn Glu Glu
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Ile Leu Arg Thr Glu Gly Val Pro Ala Glu Val His Ala Leu Met Asp
145                 150                 155                 160

Asn Gly His Phe Ala Asn Asp Pro Met Arg Trp Asn Gln Gly Tyr Pro
                165                 170                 175

Trp Asn Asn Lys Glu Pro Leu Leu Pro Asn Gly Asn His Ala Tyr Thr
            180                 185                 190

Gly Cys Val Ala Thr Ala Ala Ala Gln Ile Met Arg Tyr His Ser Trp
        195                 200                 205

Pro Leu Gln Gly Glu Gly Ser Phe Asp Tyr His Ala Gly Ser Leu Val
    210                 215                 220

Gly Asn Trp Ser Gly Thr Phe Gly Glu Met Tyr Asp Trp Ile Asn Met
225                 230                 235                 240

Pro Gly Asn Pro Asp Leu Asp Asn Leu Thr Gln Ser Gln Val Asp Ala
                245                 250                 255

Tyr Ala Thr Leu Met Arg Asp Val Ser Ala Ser Val Ser Met Ser Phe
            260                 265                 270

Tyr Glu Asn Gly Ser Gly Thr Tyr Ser Val Tyr Val Val Gly Ala Leu
        275                 280                 285

Arg Asn Asn Phe Arg Tyr Lys Arg Ser Leu Gln Leu His Val Arg Ala
    290                 295                 300

Leu Tyr Thr Ser Gln Glu Trp His Asp Met Ile Arg Gly Glu Leu Ala
305                 310                 315                 320

Ser Gly Arg Pro Val Tyr Tyr Ala Gly Asn Asn Gln Ser Ile Gly His
                325                 330                 335

Ala Phe Val Cys Asp Gly Tyr Ala Ser Asp Gly Thr Phe His Phe Asn
            340                 345                 350

Trp Gly Trp Gly Gly Val Ser Asn Gly Phe Tyr Lys Leu Thr Leu Leu
        355                 360                 365

Ser Pro Thr Ser Leu Gly Ile Gly Gly Glu Gly Ile Gly Phe Thr Ile
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Tyr Gln Glu Ile Ile Thr Gly Ile Glu Pro Ala Lys Thr Pro Ala Glu
385 390 395 400

Ala Gly Thr Asp Ala Leu Pro Ile Leu Ala Leu Lys Asp Ile Glu Ala
405 410 415

Glu Tyr Lys Ser Glu Ser Gly Leu Asn Val Gly Tyr Ser Ile Tyr Asn
420 425 430

Thr Gly Glu Glu Gln Ser Asn Leu Asp Leu Gly Tyr Arg Leu Asn Lys
435 440 445

Ala Asp Gly Glu Val Ile Glu Val Lys Thr Ser Ser Ile Asn Ile Ser
450 455 460

Trp Tyr Gly Tyr Gly Glu His Pro Glu Ser Phe Ser Leu Ala Pro Asn
465 470 475 480

Gln Leu Ser Gln Gly Ile Asn Thr Ile Thr Leu Leu Tyr Arg Arg Thr
485 490 495

Gly Thr Glu Gln Trp Glu Pro Val Arg His Ala Gln Gly Gly Tyr Val
500 505 510

Asn Ser Ile Lys Val Asn Thr Thr Asp Pro Asn Asn Val Val Val Thr
515 520 525

Val Asp Asn Asn Glu Gly Lys Leu Ser Ile Val Pro Asn Ser Phe Val
530 535 540

Ala Asp Leu Asn Ser Tyr Glu His Ser Thr Ile Thr Val Gln Phe Asn
545 550 555 560

Ser Asp Ser Pro Asp Glu Ile Arg Thr Pro Val Ala Phe Ala Leu Ser
565 570 575

Thr Gly Ala Thr Ala Asp Asp Val Ile Ser Leu Gly Trp Val Met Ala
580 585 590

Glu Val Pro Gly Gly Ser Ser Asn Tyr Pro Val Val Trp Ser Lys Asp
595 600 605

Val Leu Thr Leu Ser Glu Gly Asp Tyr Thr Leu Trp Tyr Arg Phe Ser
610 615 620

Ile Asn Asn Gln Lys Asp Glu Trp Lys Lys Ile Gly Ser Val Ser Val
625 630 635 640

Lys Thr Pro Thr Glu Tyr Thr His Pro Leu Phe Glu Val Gly His Asn
645 650 655

Gln Thr Ser Thr Tyr Thr Leu Asp Met Ala His Asn Arg Val Leu Pro
660 665 670

Asp Phe Thr Leu Lys Asn Leu Gly Leu Pro Phe Asn Gly Glu Leu Val
675 680 685

Val Val Phe Arg Gln Thr Gln Ser Ser Ser Gly Ser Leu Trp Ala Ala
690 695 700

Gln Glu Thr Val His Ile Lys Gln Gly Glu Thr Phe Val Tyr Lys Pro
705 710 715 720

Val Val Glu Gly Pro Ile Pro Asp Gly Ser Tyr Arg Ala Thr Leu His
725 730 735

Ala Phe Val Asn Gly Gln Gln Gln Leu Tyr Leu Lys Gly Lys Arg Asn
740 745 750

Tyr Thr Val Lys Ile Val Asn Gly Thr Ala Val Glu Ala Ile Glu Ser
755 760 765

Ser Glu Glu Ile Arg Val Phe Pro Asn Pro Ala Arg Asp Tyr Val Glu
770 775 780

Ile Ser Ala Pro Cys Ile Pro Gln Glu Thr Ser Ile Ile Leu Phe Asp
785 790 795 800

Leu Ser Gly Lys Ile Val Met Lys Asn Ser Leu Ser Ala Gly His Gly
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Arg Met Asp Val Ser Arg Leu Pro Asn Gly Ala Tyr Ile Leu Lys Val
820 825 830

Asp Gly Tyr Thr Thr Lys Ile Asn Ile Val His
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<213> Homo sapiens

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Gln Lys Thr Asp Thr Ser His His Asp Gln Asp His Pro Thr Phe Asn
        35                  40                  45

Lys Ile Thr Pro Asn Leu Ala Glu Phe Ala Phe Ser Leu Tyr Arg Gln
    50                  55                  60

Leu Ala His Gln Ser Asn Ser Thr Asn Ile Phe Phe Ser Pro Val Ser
65                  70                  75                  80

Ile Ala Thr Ala Phe Ala Met Leu Ser Leu Gly Thr Lys Ala Asp Thr
                85                  90                  95

His Asp Glu Ile Leu Glu Gly Leu Asn Phe Asn Leu Thr Glu Ile Pro
            100                 105                 110

Glu Ala Gln Ile His Glu Gly Phe Gln Glu Leu Leu Arg Thr Leu Asn
        115                 120                 125

Gln Pro Asp Ser Gln Leu Gln Leu Thr Thr Gly Asn Gly Leu Phe Leu
    130                 135                 140

Ser Glu Gly Leu Lys Leu Val Asp Lys Phe Leu Glu Asp Val Lys Lys
145                 150                 155                 160

Leu Tyr His Ser Glu Ala Phe Thr Val Asn Phe Gly Asp Thr Glu Glu
                165                 170                 175

Ala Lys Lys Gln Ile Asn Asp Tyr Val Glu Lys Gly Thr Gln Gly Lys
            180                 185                 190

Ile Val Asp Leu Val Lys Glu Leu Asp Arg Asp Thr Val Phe Ala Leu
        195                 200                 205

Val Asn Tyr Ile Phe Phe Lys Gly Lys Trp Glu Arg Pro Phe Glu Val
    210                 215                 220

Lys Asp Thr Glu Glu Glu Asp Phe His Val Asp Gln Val Thr Thr Val
225                 230                 235                 240

Lys Val Pro Met Met Lys Arg Leu Gly Met Phe Asn Ile Gln His Cys
                245                 250                 255
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Lys Lys Leu Ser Ser Trp Val Leu Leu Met Lys Tyr Leu Gly Asn Ala
260 265 270

Thr Ala Ile Phe Phe Leu Pro Asp Glu Gly Lys Leu Gln His Leu Glu
275 280 285

Asn Glu Leu Thr His Asp Ile Ile Thr Lys Phe Leu Glu Asn Glu Asp
290 295 300

Arg Arg Ser Ala Ser Leu His Leu Pro Lys Leu Ser Ile Thr Gly Thr
305 310 315 320

Tyr Asp Leu Lys Ser Val Leu Gly Gln Leu Gly Ile Thr Lys Val Phe
325 330 335

Ser Asn Gly Ala Asp Leu Ser Gly Val Thr Glu Glu Ala Pro Leu Lys
340 345 350

Leu Ser Lys Ala Val His Lys Ala Val Leu Thr Ile Asp Glu Lys Gly
355 360 365

Thr Glu Ala Ala Gly Ala Met Phe Leu Glu Ala Ile Pro Met Ser Ile
370 375 380

Pro Pro Glu Val Lys Phe Asn Lys Pro Phe Val Phe Leu Met Ile Glu
385 390 395 400

Gln Asn Thr Lys Ser Pro Leu Phe Met Gly Lys Val Val Asn Pro Thr
405 410 415

Gln Lys

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<400> 4
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<210> 5
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<213> Porphyromonas gingivalis

<400> 5

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Met Leu Gln Ala Gly Pro Val Thr Arg Ser Lys Ala Glu Gln Thr Ala
            20                  25                  30

Lys Asn Phe Phe Ala Lys Arg Gln Pro Thr Leu Ser Ser Ser Thr Ala
        35                  40                  45

Ser Leu Arg Met Asp Phe Val Tyr Lys Ala Ala Glu Arg Glu Glu Ala
    50                  55                  60

Leu Phe Phe Val Phe Asn Arg Gly Glu Lys Asp Gly Phe Leu Leu Val
65                  70                  75                  80

Ala Ala Asp Asp Arg Phe Pro Glu Val Ile Gly Tyr Ala Phe Lys Gly
                85                  90                  95

His Phe Asp Ala Ala Arg Ile Pro Asp Asn Leu Arg Gly Trp Leu Lys
            100                 105                 110

Gly Tyr Glu Arg Glu Met Leu Ala Val Met Asp Gly Lys Ala Glu Pro
        115                 120                 125

Ile Asp Pro Ile Arg Glu Ala Lys Pro Thr Arg Asp Leu Pro Ser Ser
    130                 135                 140

Ile Ala Pro Ile Leu Glu Thr Gly Glu His Ala Ser Asp Pro Ile Leu
145                 150                 155                 160

Trp Asp Gln Gly Tyr Pro Phe Asn Thr Leu His Pro Leu Leu Pro Ser
                165                 170                 175

Gly Gln Gln Ala Tyr Thr Gly Cys Val Ala Thr Ala Met Gly Gln Ile
            180                 185                 190

Met Arg His Tyr Lys Trp Pro Glu Lys Ala Ser Gly Glu Tyr Asp Tyr
        195                 200                 205

Tyr Asp Asp Met Thr Gly Thr His Thr His Tyr Ser Gly Thr Phe Gly
    210                 215                 220

Glu Thr Tyr Asn Trp Ser Lys Met Pro Gly Asn Ile Ser Val Gly Ile
225                 230                 235                 240
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Ser Pro Glu Glu Val Lys Ala Leu Ser Thr Phe Met Arg Asp Val Ser
245 250 255

Phe Ser Val Asn Met Gln Phe Ala Asp Phe Gly Ser Gly Thr Phe Ser
260 265 270

Ile Phe Val Glu Arg Ala Leu Arg Glu Thr Phe His Tyr Lys Lys Ser
275 280 285

Leu Arg Tyr Ile His Arg Ser Leu Leu Pro Gly Lys Glu Trp Lys Asp
290 295 300

Met Ile Arg Lys Glu Leu Ala Glu Asn Arg Pro Val Tyr Tyr Ala Gly
305 310 315 320

Ala Asp Gly Ser Met Gly His Ala Phe Val Cys Asp Gly Tyr Glu Pro
325 330 335

Asp Gly Thr Phe His Phe Asn Trp Gly Trp Gly Gly Met Ser Asn Gly
340 345 350

Asn Phe Tyr Leu Asn Leu Leu Asn Pro Gly Ser Leu Gly Thr Arg Ala
355 360 365

Gly Asp Gly Gly Tyr Ser Thr Asp Gln Glu Val Val Ile Gly Ile Glu
370 375 380

Pro Ala Ser Asn Glu Val Pro Gly Ile Val Pro Asp Pro Thr Ile Thr
385 390 395 400

Leu Tyr Gly Leu Gln His Asn Met Ser Asp Glu Ala Leu Asp Leu Ser
405 410 415

Val Lys Ile Lys Asn Tyr Ser Thr Tyr Ala Gly Asp Val Lys Leu Ala
420 425 430

Tyr Arg Leu Thr Leu Pro Asn Gly Thr Glu Thr Thr Asn Pro Ala Val
435 440 445

Thr Val Pro Ile Val Trp Glu Asp Ile Ile Gly Glu Ser Thr Gly Asn
450 455 460

Ile Thr Ile Pro Cys Ser Gln Phe Ala Glu Gly Lys Asn Thr Ile Ser
465 470 475 480

Ile Leu Tyr Arg Thr Asp Gly Met Ala Asp Trp Lys Glu Leu Lys His
485 490 495

Ile Leu Met Gly Leu Val Asn Lys Ile Glu Val Thr Met Pro Ala Gly
500 505 510

Asp Val Ala Tyr Ser Val Ala Asp Ala Arg Ile Val Leu Lys Asp Gly
515 520 525

Ser Leu Ser His Asp Leu Lys Ala Tyr Ser Asp Cys Lys Leu Ser Ala
530 535 540

Thr Val Tyr Asn Pro Gly Thr Glu Glu Phe Arg Ser Arg Val Thr Phe
545 550 555 560

Ala Leu Arg Asn Thr Glu Gly Arg Leu Tyr Phe Leu Gly Arg His Leu
565 570 575

Val Glu Leu His Pro Gly Asp Glu Asp Gly Glu Lys Val Ser Leu Thr
580 585 590

Ile Thr Gly Leu Lys Ala Arg Ala Gly Gln Tyr Met Leu Val Cys Thr
595 600 605

Gly Asp Met Glu Ser Leu Met Glu Asp Ala Ser Trp Ile Glu Leu Ala
610 615 620

Ser Ile Glu Val Ala Glu His Thr Ser Thr His Ser Ser Leu Leu Val
625 630 635 640

Ala Ser Asn Pro Gln Ile Asp Leu Leu Thr Val His Arg Ala Asn Pro
645 650 655

Glu Thr Leu Pro Thr Phe Ser Ile Thr Asn Glu Gly Gly Ala Thr Phe
660 665 670

Ser Gly Lys Ile Glu Ile Val Ala Ile Lys Ala Phe Ser Glu Thr Phe
675 680 685

Phe Gln Ala Lys Glu Glu His Met Ser Leu Ala Gln Gly Glu Thr Lys
690 695 700

Val Leu Ser Pro Glu Leu Thr Ala Asn Ser Ser Leu Tyr Thr Asn Ala
705 710 715 720

Glu Leu Phe Pro Asp Gly Thr Tyr Tyr Ile Val Ile Arg Glu Gln Gly
725 730 735

Phe Trp Asp Pro Ile Asp Leu Phe Gly Asp Tyr Tyr Tyr Arg Ile Arg
740 745 750

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Leu Ile Thr Asp Leu Ser Ser Ser Asp Ile Ala Gly Lys Asp Val Ser
        755                 760                 765

Thr Ile Val Leu Tyr Pro Asn Pro Ala His Asp Tyr Val His Val Ala
    770                 775                 780

Ile Pro Pro Thr Tyr Ala Gly Ser Thr Leu Arg Leu Phe Asp Ile Gln
785                 790                 795                 800

Gly Arg Met Gln Leu Ser Thr Lys Ile Glu Ser Ala Asp Met Arg Leu
                805                 810                 815

Asp Val Glu Arg Leu Pro Lys Gly Thr Tyr Ile Val Val Val Glu Asp
            820                 825                 830

Met Val Gly Lys Leu Phe Ile Arg
        835                 840
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            20                  25                  30

Arg Asn Glu Lys Glu Ala Lys Asp Ser Ala Ile Thr Phe Ile Gln Lys
        35                  40                  45

Ser Ala Ala Ile Lys Ala Gly Ala Arg Ser Ala Glu Asp Ile Lys Leu
    50                  55                  60

Asp Lys Val Asn Leu Gly Gly Glu Leu Ser Gly Ser Asn Met Tyr Val
65                  70                  75                  80

Tyr Asn Ile Ser Thr Gly Gly Phe Val Ile Val Ser Gly Asp Lys Arg
                85                  90                  95

Ser Pro Glu Ile Leu Gly Tyr Ser Thr Ser Gly Ser Phe Asp Ala Asn
            100                 105                 110

Gly Lys Glu Asn Ile Ala Ser Phe Met Glu Ser Tyr Val Glu Gln Ile
        115                 120                 125
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Lys Glu Asn Lys Lys Leu Asp Thr Thr Tyr Ala Gly Thr Ala Glu Ile
130 135 140

Lys Gln Pro Val Val Lys Ser Leu Leu Asp Ser Lys Gly Ile His Tyr
145 150 155 160

Asn Gln Gly Asn Pro Tyr Asn Leu Leu Thr Pro Val Ile Glu Lys Val
165 170 175

Lys Pro Gly Glu Gln Ser Phe Val Gly Gln His Ala Ala Thr Gly Cys
180 185 190

Val Ala Thr Ala Thr Ala Gln Ile Met Lys Tyr His Asn Tyr Pro Asn
195 200 205

Lys Gly Leu Lys Asp Tyr Thr Tyr Thr Leu Ser Ser Asn Asn Pro Tyr
210 215 220

Phe Asn His Pro Lys Asn Leu Phe Ala Ala Ile Ser Thr Arg Gln Tyr
225 230 235 240

Asn Trp Asn Asn Ile Leu Pro Thr Tyr Ser Gly Arg Glu Ser Asn Val
245 250 255

Gln Lys Met Ala Ile Ser Glu Leu Met Ala Asp Val Gly Ile Ser Val
260 265 270

Asp Met Asp Tyr Gly Pro Ser Ser Gly Ser Ala Gly Ser Ser Arg Val
275 280 285

Gln Arg Ala Leu Lys Glu Asn Phe Gly Tyr Asn Gln Ser Val His Gln
290 295 300

Ile Asn Arg Ser Asp Phe Ser Lys Gln Asp Trp Glu Ala Gln Ile Asp
305 310 315 320

Lys Glu Leu Ser Gln Asn Gln Pro Val Tyr Tyr Gln Gly Val Gly Lys
325 330 335

Val Gly Gly His Ala Phe Val Ile Asp Gly Ala Asp Gly Arg Asn Phe
340 345 350

Tyr His Val Asn Trp Gly Trp Gly Gly Val Ser Asp Gly Phe Phe Arg
355 360 365

Leu Asp Ala Leu Asn Pro Ser Ala Leu Gly Thr Gly Gly Gly Ala Gly
370 375 380

Gly Phe Asn Gly Tyr Gln Ser Ala Val Val Gly Ile Lys Pro
385   390   395